

REMARKS

Applicant amends paragraph [0047] of the specification to correct an obvious error therein; see paragraphs [0051] and the following.

Examiner Vo issues the following three statutory prior art rejections:

- (1) Claims 1-4, 7, 8 and 10-13 are rejected under 35 U.S.C. § 103(a) as being unpatentable (obvious) over Yamada '910 in view of Toncich '748;
- (2) Claims 5 and 6 are rejected under 35 U.S.C. § 103(a) as being unpatentable (obvious) over Yamada in view of Toncich and further in view of Kearns '487; and
- (3) Claim 9 is rejected under 35 U.S.C. § 103(a) as being unpatentable (obvious) over Yamada in view of Toncich and further in view of Harihara '385.

Applicant respectfully **traverses** each of these rejections insofar as they may be applied to the new claims 14-25.

For the Examiner's convenience, the Applicant presents the following summary of claim amendments and of the relationships between the new claims and the original claims 1-13.

Claims 1-13 are canceled, and new claims 14-25 are added,

Claim 14 is supported by claims 1 and 2, Fig. 4, paragraph [0045], lines 5-9, and paragraph [0046], lines 4-7.

Claim 15 corresponds to claim 2.

Claim 16 is supported by paragraphs [0064] and [0065] (said inductance element of said series resonance circuit is inductor L6).

Claim 17 is supported by Fig. 12. (In Fig. 12, the amplifier circuit is RF-IC, the switch circuit is SW(SPDT), and the bandpass filter circuit and the balanced-unbalanced circuit are BPF and Balun, respectively).

Claims 18-20 correspond to claims 5-7.

Claim 21 is supported by claims 8 and 13, Figs. 4, 8 and 9, paragraph [0045], lines 5-9 and paragraph [0046], lines 4-7.

Claims 22-25 correspond to claims 9-12.

[1] Rejection of claims 1-4, 7, 8 and 10-13 under 35 U.S.C. 103(a) as being unpatentable over Yamada (US 2003/0189910) in view of Toncich (US 2007/0207748)

Claims 1-4, 7, 8 and 10-13 correspond to claims 14-17, 20, 21 and 23-25.

Yamada discloses a 3-frequency branching circuit comprising a lowpass filter circuit, a highpass filter circuit and a bandpass filter circuit, the lowpass filter circuit and highpass filter circuit comprising inductance elements and capacitance elements, the bandpass filter circuit being a SAW filter, and the passband f_1 of the lowpass filter circuit, the passband f_2 of the bandpass filter circuit, and the passband f_3 of the highpass filter circuit meeting the condition of $f_1 < f_2 < f_3$ (see Figs. 49 and 50).

Yamada fails to disclose or even suggest a matching circuit connected to the SAW filter, which has an inductance element connected to ground, and a capacitance element disposed between an antenna port and the SAW filter.

Examiner Vo states that Toncich discloses in Figure 11 an antenna matching circuit 163 comprising capacitance elements and inductance elements (see Figure 7), and that it would have been obvious to one of ordinary skill in the art at the time of invention to provide the above teaching of Toncich to Yamada (see page 3, the first paragraph, of the Office Action).

However, Yamada and Toncich both fail to disclose or even suggest the technical limitation of claim 14 that a high-frequency circuit comprises a lowpass filter circuit, a highpass

filter circuit and a bandpass filter circuit (SAW filter), and a SAW filter is connected to a matching circuit having an inductance element and a capacitance element.

As disclosed in Applicant's paragraph [0047] and Fig. 4, the matching circuit is constituted by a capacitance element C32 and an inductance element L7, not only functioning to match the input impedance of the SAW filter when viewed from the antenna to a predetermined impedance (for instance, about 50 S2), but also functioning as a phase shifter. The phase shifter has a function to adjust a phase, such that the SAW filter has high impedance when viewed from the first port P1. Accordingly, high impedance can be achieved in the passbands of the lowpass filter circuit and the highpass filter circuit, resulting in excellent branching properties. To the contrary, Toncich merely discloses a matching circuit disposed between an antenna and a band pass filter.

Further, the lowpass filter circuit of claim 14 comprises an inductance element and a capacitance element, the parallel resonance circuit having a resonance frequency within the passband f2 of the SAW filter, and the highpass filter circuit of claim 14 comprises an inductance element and a capacitance element, the series resonance circuit having a resonance frequency within the passband f2 of the SAW filter. Therefore, the lowpass filter circuit and the highpass filter circuit have high impedance in the frequency band f2 (of the SAW filter) which lies adjacent to the frequency bands f1 and f3, resulting in excellent branching properties. Such a technical feature is not disclosed in Yamada and Toncich.

Accordingly, Yamada and Toncich, in combination, fail to teach or even suggest the technical features of claim 14 that (1) because the SAW filter is connected to a matching circuit not only functioning to match the input impedance of the SAW filter, when viewed from the antenna, to a predetermined impedance, but also functioning as a phase shifter, and (2) because

the lowpass filter circuit and the highpass filter circuit comprise the parallel resonance circuit and the series resonance circuit, respectively, to have high impedance in the frequency band f_2 of the SAW filter adjacent to the frequency bands f_1 and f_3 , the high-frequency circuit of claim 14 is provided with excellent branching properties.

Claims 15-17 and 20 having all feature of claim 14 are also not taught or suggested by Yamada and Toncich.

The "high-frequency device" of claim 21 has all the technical features of claim 14, and thus claim 21 and claims 23-25 depending from claim 21 are also patentable over Yamada and Toncich.

[2] Rejection of claims 5-6 under 35 U.S.C. 103(a) as being unpatentable over Yamada in view of Toncich and further in view of Kearns (US 2004/0132487)

Claims 5-6 correspond to new claims 18-19.

Kearns discloses that the SAW filters have the additional benefit of being capable of providing unbalanced to balanced conversion (see paragraph [0050]). However, Kearns also fails to disclose or suggest the technical feature of the claimed invention that because the SAW filter is connected to a matching circuit not only functioning to match the input impedance of the SAW filter when viewed from the antenna to a predetermined impedance, but also functioning as a phase shifter, and because the lowpass filter circuit and the highpass filter circuit comprise the parallel resonance circuit and the series resonance circuit, respectively, to have high impedance in the frequency band f_2 of the SAW filter adjacent to the frequency bands f_1 and f_3 , the high-frequency circuit of claim 14 can be provided with excellent branching properties.

Therefore, claims 18-19, depending from claim 14, are not taught or suggested by the combination of Yamada, Toncich and Kearns.

[3] Rejection of claim 9 under 35 U.S.C. 103(a) as being unpatentable over Yamada in view of Toncich and further in view of Harihara (US 2004/0119647)

Claim 9 corresponds to new claim 22.

Harihara discloses that the circuit elements do not overlap each other in a laminate direction of the laminate substrate (see Abstract). However, Harihara also fails to disclose or suggest the above-mentioned technical features of parent claim 21.

Therefore, claim 22, depending from claim 21, also is not taught or suggested by the combination of Yamada, Toncich and Harihara.

In summary, then, Applicant has explained why the subject matter of each of the new claims 14-25 would not have been obvious from the teachings of the references cited in support of Examiner Vo's three rejections under 35 U.S.C. § 103(a). Therefore, Applicant respectfully requests the Examiner to reconsider and withdraw these rejections, and to find the application to be in condition for allowance with all of claims 14-25; however, if for any reason the Examiner feels that the application is not now in condition for allowance, the Examiner is respectfully requested to **call the undersigned attorney** to discuss any unresolved issues and to expedite the disposition of the application.

Applicant files concurrently herewith a Petition (with fee) for Extension of Time of one month. Applicant hereby petitions for any extension of time which may be required to maintain the pendency of this application, and any required fee for such extension is to be charged to Deposit Account No. 19-4880. The Commissioner is also authorized to charge any additional

fees under 37 C.F.R. § 1.16 and/or § 1.17 necessary to keep this application pending in the Patent and Trademark Office or credit any overpayment to said Deposit Account No. 19-4880.

Also filed concurrently herewith is an Information Disclosure Statement.

Respectfully submitted,

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